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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,832	07/09/2003	Takahiro Kase	240045US2S	8120
22850	7590	11/02/2005		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.				EXAMINER
1940 DUKE STREET				WILLOUGHBY, TERRENCE RONIQUE
ALEXANDRIA, VA 22314				ART UNIT
				PAPER NUMBER
				2836

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/614,832	KASE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Terrence R. Willoughby	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-26 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-3,7,11,15,19 and 23 is/are rejected.  
 7) Claim(s) 4-6,8-10,12-14,16-18,20-22 and 24-26 is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 4/11/05; 7/05/05, 7/9/05.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (US 5,796,630) and in further view of Bo (US 6,369,996 B1).

Regarding claim 1, Maeda et al. discloses a distance relay (Fig. 3, numeral 2) apparatus comprising: a sampling element (10) which samples an amount of electricity of a voltage and a current, which are received from an object to be protected, at regular intervals (Column 8, line 65-67 and Column 9, line 1-2); an A/D converting element (14) (Column 9, lines 8-9) which converts the amount of electricity sampled by the sampling element into digital data; a first directional relay element (15) (Column 9, lines 8-11) which receives the digital data obtained by the A/D converting element to perform computation to detect a fault, which occurs in the forward direction from an installing point of the relay apparatus, based on a computing equation (Column 2, lines 64-67 and Column 3, lines 3-4). Maeda et al. does not teach a zone-1 distance relay element and a fault detecting relay element. However, Bo discloses a zone-1 distance relay element (Fig. 1(a)) which receives the digital data to perform computation to detect a fault within

a predetermined zone viewed from the installing point of the relay apparatus (Abstract, lines 10-13); a fault detecting relay element (Fig. 1(a)) which receives the digital data to perform computation to detect a fault within a zone that is narrower than that of the zone-1 distance relay element in terms of data time length which is shorter than that used for the computation of the zone-1 distance relay element(Abstract, lines 17-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a zone-1 distance relay element and the fault detecting relay element both taught by Bo combine with the first directional relay of the protective relay apparatus taught by Maeda et al. to detect a fault within a predetermined protective zone and also detecting narrower fault located outside the original protective zone along a transmission power line.

Maeda et al. discloses a logic element which outputs a relay signal in accordance with a detecting operation of at least one of the zone-1 distance relay element and the fault detecting relay element and a detecting operation of the first directional relay element (Column 9, lines 44-56). In the above mentioned-combination the logic element would control the output of the operating signals of either the directional relay element; zone-1 distance relay element or the fault detecting relay element.

Regarding claim 2, Maeda et al. in view of Bo discloses a distance relay apparatus according to claim 1, wherein the first directional relay element (Maeda et al. Column 8, lines 61-64), the zone-1 distance relay element and the fault detecting relay

element (Bo, Fig. 1, (a)) receive the digital data. Maeda et al. discloses digital filters (Fig. 3, numeral 20), which filter the digital data and perform computation to detect a fault (Abstract, lines 1-6) within a predetermined range from the relay element to the point of fault. It would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the Maeda et al. protective relay apparatus with the Bo fault protection scheme detecting relay element to provide a high-precision filter, which will allow the fault detecting relay to acquire digital data that is necessary for detecting a fault in a shorter time and detect a close-up fault at higher speeds than the digital filter (Fig.3, numeral 22) connected to first directional relay element taught by Maeda et al. and the zone-1 distance relay element taught by Bo to improve overall system fault response accuracy.

Regarding claim 3, please refer to the recited rejection mentioned above in claim 2. The window length (time length of data) for the fault detecting relay element can be made shorter than the first directional relay element and zone-1 distance relay element through modifying the computation data for the desired relay element as this allows the system to respond to fault events known to quickly produce damage in the network.

Regarding claim 23, Maeda et al. in view of Bo discloses a distance relay apparatus according to claim 1. Bo discloses the fault detecting relay element (Fig. 1(a)) includes an impedance relay (Column 1, lines 42-44), which obtains impedance from

the voltage and the current by computation and detects that the impedance becomes not higher than a predetermined level.

Maeda et al. and Bo disclose a logic element which outputs a relay signal in accordance with a detecting operation of at least one of the zone-1 distance relay element and the fault detecting relay element and a detecting operation of the first directional relay element (Maeda et al., Column 9, lines 44-56). In the above mentioned-combination the logic element would control the output of the operating signals of both the second directional relay element and the fault detecting relay element when combine together with an AND circuit and an OR circuit in the case where both the first directional relay element and the zone-1 distance relay element are operated.

3. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (US 5,796,630) and Bo (US 6,369,996 B1) and in further view of Eijiro et al. (JP 03-270634).

Regarding claim 7, Maeda et al. in view of Bo discloses a distance relay apparatus according to claim 1. Bo discloses the fault detecting relay element and zone-1 distance relay element (Fig. 1(a)), but lacks a mho relay having a setting value that is smaller than a distance setting value of the zone-1 distance relay element. However, Eijiro et al. discloses using a mho type distance relay (Abstract, line 17) having a setting value that is smaller than a distance setting value of the zone-1 distance relay element.

It would have been obvious to those skilled in the art at the time of invention to provide a mho type distance relay in the distance relay apparatus of Maeda and Bo as taught by Eijiro. to detect high-speed fault in the distance relay apparatus.

Regarding claim 11, Maeda et al. in view of Bo discloses a distance relay apparatus according to claim 1. Bo discloses the fault detecting relay element and zone-1 distance relay element (Fig. 1(a)), but lacks a reactance relay having a setting value that is smaller than a distance setting value of the zone-1 distance relay element. However, Eijiro et al. discloses using a reactance type distance relay (Abstract, line 9) having a setting value that is smaller than a distance setting value of the zone-1 distance relay element. It would have been obvious to those skilled in the art at the time of invention to provide a reactance type distance relay in the distance relay apparatus of Maeda and Bo as taught by Eijiro. to detect high-speed fault in the distance relay apparatus.

4. Claims 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al. (US 5,796,630) and Bo (US 6,369,996 B1) and in further view of Yamaura et al. (US 4,419,737).

Regarding claim 15, Maeda et al. in view of Bo discloses a distance relay apparatus according to claim 1. Bo discloses the fault detecting relay element (Fig. 1(a)) but lacks an undervoltage relay, which detects that a voltage becomes not higher than a predetermined level. However, Yamaura et al. discloses an undervoltage relay (Column

1, line 21) for a protective relay device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an undervoltage relay taught by Yamura et al. to the fault detecting relay element of Bo to detect a voltage at a predetermined level. It would have been obvious to those skilled in the art at the time the invention was made to use an undervoltage relay in combination with the mho relays and reactance relays as taught by Yamuara et al. in the apparatus of Maeda et al. and Bo to obtain desired setting values for the respective relay element.

Regarding claim 19, Maeda et al. in view of Bo discloses a distance relay apparatus according to claim 1. Bo discloses the fault detecting relay element (Fig. 1(a)) but lacks an overcurrent relay, which detects that a current becomes not lower than a predetermined level. However, Yamaura et al. discloses an overcurrent protection relay (Column 3, line 41-55) for a protective relay device. It would have been obvious to those skilled in the art at the time the invention was made to provide an overcurrent relay taught by Yamaura et al. to the fault detecting relay element in the apparatus of Maeda et al. and Bo to detect a current level at a predetermined desired setting for the respective relay element.

***Allowable Subject Matter***

Claim 4 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. Combined claim 4 would be allowable over the art of record because the prior art does not teach having a second directional element having a setting value that is larger than that of the first directional relay element as set forth in the claimed invention.

Claim 5 is objected to as being dependent upon a rejected base claim 2, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. Combined claim 5 would be allowable over the art of record because the prior art does not teach having a second directional element having a setting value that is larger than that of the first directional relay element.

Claim 6 is objected to as being dependent upon a rejected base claim 3, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. Combined claim 6 would be allowable over the art of record because the prior art does not teach having a second directional element having a setting value that is larger than that of the first directional relay element.

Claims 8-10,12-14,16-18,20-22,24-26 are objected to as being dependent upon a rejected base claim 2, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. Claims 8,12,16,20,24 would be allowable over the art of record because the prior art does not teach having either a mho relay, reactance relay, undervoltage relay, overcurrent relay or impedance relay setting value that is smaller than that of the distance setting value of the zone-1 distance relay element.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrence R. Willoughby whose telephone number is 571-272-2725. The examiner can normally be reached on 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRW



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PRIMARY EXAMINER